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PHYSIOLOGIC RACES OF *Puccinia recondita* ROB. EX DESM.
IN THE UNITED STATES IN 1961¹C. O. Johnston²

A large number of field collections of leaf rust of wheat from many States were received in 1961 for the determination of their physiologic race content. Many collections lost their viability in shipment and storage, so it was possible to culture and analyze only 318 collections from 25 States. They revealed 15 races present in the United States in 1961 (Table 1). Race 15 was most prevalent and widely distributed for the fifth consecutive year. It comprised 39.1 percent of all isolates and was present in collections from all but 4 of the States from which samples were analyzed. Race 15 also was abundant in all the major wheat-growing areas except the western.

Race 122 was second in prevalence, comprising 11.7 percent of all isolates. It was especially abundant in the soft red winter wheat-producing area of the Southeastern States and was of considerable importance in Kansas, Minnesota, and Wisconsin. Unified race 13, of which 122 was the most important component, comprised a total of 18.6 percent of all isolates.

Race 5, third in prevalence, was more abundant in the hard red spring wheat area than elsewhere. It also was fairly abundant in some other States such as Kansas, Tennessee, and South Carolina.

Race 58 was not so abundant in 1961 as usual. Several isolates were obtained from collections made in Michigan, Tennessee, and Virginia, but it did not seem to be dominant in any area.

Unified race 9, represented by races 9, 19, and 20, seems to be increasing in prevalence. The three races totaled 22.7 percent of all isolates. They were especially abundant in Alabama, Kansas, Texas, and Iowa. This is of special interest because race 9 was dominant in the United States until 1945.

Races 1 and 11 were prevalent in the western area as shown by the data for Washington. Race 11 also was fairly abundant in Alabama. Neither race was important elsewhere.

SUMMARY

Physiologic race analyses of 318 collections of the leaf rust of wheat, *Puccinia recondita*, from 25 States revealed the presence of 15 races in the United States in 1961. Race 15 was most prevalent and most widely distributed, comprising 39.1 percent of the total isolates and appearing in collections from all but 4 States. Race 122, closely followed by races 5 and 9, was second in prevalence. Races 1 and 11 were important in the western region only. Race 122 was especially abundant in the Southeastern States and Kansas.

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TABLE 1.--Physiologic races of *Puccinia recondita* isolated from field collections made on wheat in 25 States in the United States, 1961

Geographic and wheat-growing area by State and type	Isolates of unified races (first row) and constituent physiologic races (second row)--															Iso-lates	Races	Collec-tions
	1	2	3	5	6		9			10	13				17			
	1	15	58	5	6	105	9	19	20	11	35	54	77	122	143			
NORTHEASTERN--																		
<u>Soft Red Winter</u>	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.	No.
Arkansas.....	--	9	--	2	--	3	1	2	--	1	--	--	--	--	--	18	6	8
Illinois.....	--	6	--	2	2	--	4	1	2	--	--	--	--	--	--	17	6	6
Indiana.....	--	--	--	--	--	--	1	1	--	--	1	--	--	--	--	3	3	2
Michigan.....	--	16	5	2	--	--	2	1	1	--	--	--	--	1	--	28	7	8
Missouri.....	--	1	--	--	--	--	--	--	--	--	1	--	--	2	--	4	3	3
Ohio.....	--	3	2	--	--	--	--	--	1	--	--	--	--	1	--	7	4	5
Pennsylvania.....	--	2	--	--	--	--	--	--	--	--	--	--	--	1	--	3	2	2
SOUTHEASTERN--																		
<u>Soft Red Winter</u>																		
Alabama.....	--	1	--	--	--	--	8	4	5	4	--	1	--	--	--	23	6	12
Florida.....	--	14	1	3	--	--	--	--	--	--	--	--	--	5	--	23	4	4
Georgia.....	--	--	--	--	--	1	--	--	--	--	4	2	--	16	--	23	4	6
Mississippi.....	--	4	--	1	--	--	3	3	1	--	--	--	--	--	--	12	5	3
Tennessee.....	--	32	9	8	2	--	--	1	--	--	2	--	--	5	--	59	7	21
South Carolina.....	--	4	--	6	--	2	1	--	--	--	--	--	--	2	--	15	5	8
Virginia.....	--	8	5	--	--	--	--	--	--	--	--	--	--	--	--	13	2	3
CENTRAL--																		
<u>Hard Red Winter</u>																		
Colorado.....	--	10	--	3	--	--	--	--	2	--	1	--	--	1	--	17	5	3
Kansas.....	1	46	2	11	3	--	19	28	17	--	5	9	6	21	1	169	13	59
Nebraska.....	--	10	--	2	--	--	--	--	--	--	--	--	--	--	--	12	2	6
Oklahoma.....	--	--	--	--	--	--	1	4	--	--	--	--	--	--	--	5	2	1
Texas.....	--	15	--	1	--	--	5	8	1	--	2	1	--	5	--	38	8	19
Wyoming.....	--	11	--	--	--	--	--	--	--	--	--	--	--	1	--	12	2	4
NORTH CENTRAL--																		
<u>Hard Red Spring</u>																		
Iowa.....	--	25	1	9	--	--	12	2	4	--	--	--	--	2	--	55	7	18
Minnesota.....	--	22	2	14	1	1	--	--	--	1	--	1	1	9	2	54	10	11
North Dakota.....	--	20	--	7	--	--	2	1	--	--	--	--	--	1	--	31	5	7
South Dakota.....	--	4	--	--	--	--	--	--	--	--	--	--	--	--	--	4	1	1
Wisconsin.....	--	--	--	2	--	--	1	1	1	--	--	2	1	6	1	15	8	7
WESTERN--																		
<u>White Wheat</u>																		
Washington.....	5	1	--	--	--	--	--	1	--	6	--	2	--	--	--	15	5	3
Total.....	6	264	27	73	8	7	60	58	35	12	16	18	8	79	4	675	15	318
Percentage of total isolates.....	0.9	39.1	4.0	10.8	1.2	1.0	8.9	8.6	5.2	1.8	4.4	2.7	1.2	11.7	0.6	--	--	--